CLAIMS

1. A polymeric composition comprising at least one acrylic copolymer constituted of 90 to 99 mole-% of acrylic (AC) monomer units and of at least one water-soluble comonomer unit.

2. Composition according to claim 1 comprising at least one acrylonitrile copolymer constituted of 90 to 99 mole-% of acrylonitrile (AN) monomer units and of at least one water-soluble comonomer unit.

3. Composition according to claim 1 or 2, wherein the comonomer is an ionic monomer, particularly an anionic monomer.

4. Composition according to claim 3, wherein the comonomer is 2-acrylamido-2-methyl-propane sulfonic acid (AMPS).

5. Composition according to claim 3, comprising AMPS with a molar content in the copolymer of 1 to 10 mole-%, particularly of 3 to 5 mole-%.

6. Method for producing a composition according to claims 1 to 5, comprising copolymerising acrylic (AC) monomers with at least one water-soluble comonomer in presence of a suitable radical initiator in a suitable solvent.

7. Method according to claim 6, comprising copolymerising acrylonitrile (AN) monomers with at least one water-soluble comonomer in presence of a suitable radical initiator in a suitable solvent.

8. Method according to claim 6 or 7, wherein the radical initiator is ammonium peroxodisulfate (APS).

9. Method according to any one of the preceding claims 6 to 8, wherein a total concentration of monomers in the reaction solution of 1 to 5 mole/l, particularly of about 4 mole/l, and a concentration of the radical initiator of 0,4 to 4 mmole/l, particularly of about 4 mmole/l, is adjusted.

10. Method according to any one of the preceding claims 6 to 9, wherein the solvent is an aprotic solvent, particularly dimethylformamide (DMS).

11. Use of a composition according to claims 1 to 5 for producing materials being used in medical or biological applications involving a direct contact of the material with fluids and/or cells and/or tissues.

12. Use according to claim 11, wherein the material is a membrane, a film or a surface coating.

13. Use according to claim 11 or 12, wherein the material is employed as support for cells, particularly tissue cells, the cells being in contact with a fluid stream, which supplies the cells with nutrients and enables exchange of substances into the cells and outside the cells.

14. Use according to claim 13, wherein the tissue cells are hepatocytes.

15. Use according to any one of preceding claims 11 to 14, wherein the material is used in biohybrid or bioartificial organs.

16. Use according to claim 15, wherein the material is a membrane with immobilised organ cells, such as liver, pancreas, lung cells, and wherein the cells are separated from the fluid stream.

17. Use according to any of the preceding claims 11 to 14, wherein the material is used for medical applications within the body, such as implants or biosensors.

18. Membrane, film or coating essentially made up of a composition according to any one of claims 1 to 5.

19. Membrane, film or coating comprising a blend of a composition according to any one of claims 1 to 5 and poly-acrylonitrile (PAN).

20. Membrane according to claim 18 or 19 being formed by a phase-inversion process.

21. Membrane according to any one of preceding claims 18 to 20, wherein the membrane is an asymmetric membrane, comprising an outer dense layer having an average pore size of 1 to 50 nm, particularly of 3 to 20 nm, more particularly of 5 to 12 nm.

22. Membrane according to any one of preceding claims 18 to 20, comprising a flat or hollow fibre membrane having at least a two-layer cross sectional structure substantially consisting of a dense surface layer and a porous bulk layer having finger-like pores communicating with the dense layer.

23. Membrane according to any one of preceding claims 18 to 22, having a rate of water flux through the membrane in the range of 1 to 10 l/m^2hkPa, particularly of about 2 l/m^2hkPa.

24. Membrane according to any one of preceding claims 18 to 23, having a cut-off in the range of 150 to 1,000 kDa, particularly of 200 to 600 kDa, more particularly of 300 to 400 kDa.

25. Method for producing a membrane according to any one of preceding claims 18 to 24, comprising the steps of

(a) preparing a casting solution, which contains a polymeric composition according to claims 1 to 5 dissolved in a suitable solvent;

(b) casting the solution on a support or extruding the solution through a suitable nozzle; and

(c) coagulating the cast or the extruded solution in a coagulation bath to form an asymmetric membrane.

26. Method according to claim 25, wherein the asymmetric membrane is subjected to a wet post-treatment in water or steam.

27. Method according to claim 25 or 26, wherein the casting solution is prepared to have a solid content of the polymeric composition of 15 to 25 weight-%.

28. Method according to any one of preceding claims 25 to 27, wherein the solvent is a polar solvent.

29. Method according to any one of preceding claims 25 to 28, wherein the coagulation is performed by a wet or wet-dry-wet process.

30. Method according to any one of preceding claims 25 to 29, wherein the casting solution is extruded through a tube-in-orifice type nozzle.